

WHAT IS CLAIMED IS:

1. A computer implemented method for rendering a synthesized image, comprising:
 - accessing a first texton mask indicative of feature elements in a sample texture;
 - creating a second texton mask having progressively-variant features based on a user selected transition function applied to the first texton mask; and
 - creating a synthesized texture image guided by the first texton mask, the second texton mask and the sample texture.
2. The method of claim 1 wherein creating the second texton mask comprises creating the second texton mask with representative values indicating a plurality of colors.
3. The method of claim 1 wherein creating the second texton mask comprises creating the second texton mask with binary representative values indicating a plurality of colors.
4. The method of claim 1 wherein creating the second texton mask comprises creating the second texton mask with a transition function including mesh warping.
5. The method of claim 1 wherein creating the second texton mask comprises creating the second texton mask with a transition function including field warping.

6. The method of claim 1 wherein creating the second texton mask comprises creating the second texton mask with a transition function using radial basis functions.
7. The method of claim 1 wherein creating the synthesized texture includes identifying a portion of the synthesized texture to synthesize and identifying a corresponding portion of the second texton mask for the portion to be synthesized.
8. The method of claim 7 wherein creating the synthesized texture includes identifying a portion of the first texton mask similar to the portion of the second texton mask and identifying a corresponding portion of the sample texture corresponding to the portion of the first texton mask.
9. The method of claim 8 wherein creating the synthesized texture includes assigning pixel characteristics of the portion of the synthesized texture according to the portion of the sample texture.
10. A computer implemented method for rendering a synthesized image, comprising:
 - accessing a first texton mask and a second texton mask, each texton mask being indicative of feature elements in respective first and second sample textures;
 - creating a third texton mask being based on a combination of the first texton mask and the second texton mask; and

creating a synthesized texture image guided by the first texton mask, the second texton mask, the first sample texture and the second sample texture.

11. The method of claim 10 wherein creating the third texton mask comprises interpolating between the first texton mask and the second texton mask.

12. The method of claim 11 wherein interpolating between the first texton mask and the second texton mask comprises interpolating two dimensional functions of the first texton mask and the second texton mask in three dimensions and obtaining a two dimensional portion.

13. The method of claim 11 wherein creating the third texton mask comprises smoothing the third texton mask after interpolating.

14. The method of claim 13 wherein smoothing comprises using a Gaussian function.

15. The method of claim 13 wherein creating the third texton mask comprises setting values of the third texton mask as a function of a threshold.

16. The method of claim 10 wherein creating the synthesized texture comprises:

creating a first modified texture guided by the first texton mask, the third texton mask and the first sample texture;

creating a second modified texture guided by the second texton mask, the third texton mask and the second sample texture;
combining the first modified texture and the second modified texture.

17. The method of claim 16 wherein combining the first modified texture and the second modified texture includes using a selected transition function.

18. The method of claim 16 wherein creating the first modified texture includes identifying a portion of the first modified texture to synthesize and identifying a corresponding portion of the third texton mask for the portion to be synthesized, and wherein creating the second modified texture includes identifying a portion of the second modified texture to synthesize and identifying a corresponding portion of the third texton mask for the portion to be synthesized.

19. The method of claim 18 wherein creating the first modified texture includes identifying a portion of the first texton mask similar to the portion of the third texton mask and identifying a corresponding portion of the first sample texture corresponding to the portion of the first texton mask, and wherein creating the second modified texture includes identifying a portion of the second texton mask similar to the portion of the third texton mask and identifying a corresponding portion of the second sample texture corresponding to the portion of the second texton mask.

20. The method of claim 19 wherein creating the first modified texture includes assigning pixel characteristics of the portion of the first modified texture according to the portion of the first sample texture, and wherein creating the second modified texture includes assigning pixel characteristics of the portion of the second modified texture according to the portion of the second sample texture.

21. A computer implemented method for rendering a synthesized texture on an image of a three-dimensional object, comprising:

accessing a two-dimensional progressively-variant sample texture, a texton mask for the sample texture and a representation of the three-dimensional object comprising a mesh of a plurality of vertices; and

creating a synthesized texture on the object guided by the two-dimensional progressively-variant sample texture, the texton mask for the sample texture and the mesh of a plurality of vertices.

22. The method of claim 21 wherein creating the synthesized texture comprises synthesizing a texton mask on the mesh along with a target texture.

23. The method of claim 22 wherein synthesizing a texton mask on the mesh along with a target texture comprises

determining a texton mask value and determining a color value at each vertex.

24. The method of claim 23 wherein determining a texton mask value and determining a color value includes determining a candidate pool of pixels to select from.

25. The method of claim 24 wherein determining the texton mask value includes forming a first neighborhood of mask values of vertices about each vertex and a second neighborhood of mask values about each pixel in the candidate pool of pixels.

26. The method of claim 25 wherein determining the texton mask value at each vertex includes selecting the mask value for the candidate pixel having the smallest distance between the first neighborhood of mask values of the vertex and the second neighborhood of mask values about each pixel in the candidate pool of pixels.

27. The method of claim 26 wherein determining the color value includes forming a first neighborhood of color values of vertices about each vertex and a second neighborhood of color values about each pixel in the candidate pool of pixels.

28. The method of claim 27 wherein determining the color value at each vertex includes selecting the color value for the candidate pixel having the smallest of the sum of the distance between the first neighborhood of mask values of the vertex and the second neighborhood of mask values about

each pixel in the candidate pool of pixels and the distance between the first neighborhood of color values of the vertex and the second neighborhood of color values about each pixel in the candidate pool of pixels.

29. The method of claim 28 wherein a number of pixels forming the neighborhoods of mask values is greater than a number of pixels forming neighborhoods of color values.